WHAT WE CLAIM IS:

1. A two-dimensional optical scanner, comprising:

a light source,

a scanner unit for scanning a light beam from said light source on a surface to be scanned in a two-dimensional direction, and

a scanning optical system having a non-rotationally symmetric surface, wherein:

said scanner unit has a gimbal structure, and

said scanning optical system comprises a decentered prism comprising an entrance surface through which a light beam scanned by said scanner unit enters said prism,

at least one reflecting surface for allowing a light beam entered from said entrance surface in said prism to be reflected in said prism, and

an exit surface through which a light beam reflected at said second reflecting surface leaves said prism,

wherein at least one of said entrance surface, said reflecting surface and said exit surface comprises a non-rotationally symmetric surface.

2. The two-dimensional optical scanner according to claim 1, wherein:

said light source is a light-emitting diode or a laser diode.

3. The two-dimensional optical scanner according to claim 1 or 2, wherein:

said light source includes light of at least R, G and B wavelengths.

4. The two-dimensional optical scanner according to claim 1, which further comprises:

an optical element having positive power, which is interposed between said optical system and said scanner unit for collimation of a light beam from said light source.

5. The two-dimensional optical scanner according to claim 1, wherein:

at least one of said non-rotationally symmetric surfaces is a transmitting surface.

6. The two-dimensional optical scanner according to claim 1, wherein:

at least one of said non-rotationally symmetric surfaces is a reflecting surface.

7. The two-dimensional optical scanner according to claim 1, wherein:

at least two of said non-rotationally symmetric surfaces are reflecting surfaces.

8. The two-dimensional optical scanner according to claim 1, wherein:

said decentered prism comprises:

a first reflecting surface for reflection in said prism of a light beam entered from said entrance surface in said prism, and

a second reflecting surface for reflection in said prism of a light beam reflected at said first reflecting surface,

wherein said entrance surface and said second

reflecting surface are made up of an identical surface.

9. The two-dimensional optical scanner according to claim 1, wherein:

said decentered prism comprises:

a first reflecting surface for reflection in said prism of a light beam entered from said entrance surface in said prism, and

a second reflecting surface for reflection in said prism of a light beam reflected at said first reflecting surface, and

said decentered prism is designed such that a light beam from said entrance surface toward said first reflecting surface and a light beam from said second reflecting surface toward said exit surface cross in said prism.

10. The two-dimensional optical scanner according to claim 1, wherein:

said decentered prism comprises:

a first reflecting surface for reflection in said prism of a light beam entered from said entrance surface in said prism, and

a second reflecting surface for reflection in said prism of a light beam reflected at said first reflecting surface,

wherein said exit surface and said second reflecting surface are made up of an identical surface.

11. An image display system, comprising:

a light source,

a scanner unit for scanning a light beam from said light source in a two-dimension direction,

a scanning optical system having a non-rotationally symmetric surface, and

an eyepiece optical system located near a surface to be scanned and having positive power, wherein:

said scanner unit has a gimbal structure, and

said scanning optical system comprises a decentered prism comprising:

an entrance surface through which a light beam scanned by said scanner unit enters said prism,

at least one reflecting surface for allowing a light beam entered from said entrance surface in said prism to be reflected in said prism, and

an exit surface through which a light beam reflected at said second reflecting surface leaves said prism,

wherein at least one of said entrance surface, said reflecting surface and said exit surface comprises a non-rotationally symmetric surface.

12. The image display system according to claim 11, wherein a diffusing surface having optical diffusibility is located near said surface to be scanned.

13. The image display system according to claim 12, wherein at least two diffusing surfaces are provided.

14. The image display system according to claim 12, wherein said diffusing surface has an angle of diffusion of 20° or less at full width half maximum where light

intensity goes down to 1/2.

15. The image display system according to claim 12, wherein said diffusing surface has an angle of diffusion of 40° or less at a full width where light intensity goes down to 1/10.

16. The image display system according to claim 12, wherein a pair of left and right two-dimensional optical scanners, each comprising said light source, said scanner unit and said scanning optical system, are provided with respect to said eyepiece optical system.

17. The image display system according to claim 16, wherein said pair of left and right two-dimensional optical scanners display an identical image.

18. The image display system according to claim 16, wherein said pair of left and right two-dimensional optical scanners display different images.

19. The image display system according to claim 18, wherein said diffusing surface has an angle of diffusion of 8° or less at full width half maximum.

20. The image display system according to claim 18, wherein said diffusing surface has an angle of diffusion of 12° or less at a full width where light intensity goes down to 1/10.

21. The image display system according to claim 17, which satisifes the following conditions:
for a single transmission type diffusing plate,

$$5<(Sm/Ra)\times(Ep/400)<70 \quad \ldots (1)$$

for a double-transmission type diffusing plate,

$$10<(Sm/Ra)\times(Ep/400)<80 \quad \ldots (2)$$

for a front-surface reflection type diffusing plate,

$$50<(Sm/Ra)\times(Ep/400)<200 \quad \ldots (3)$$

for a back-surface reflection type diffusing plate,

$$80<(Sm/Ra)\times(Ep/400)<250 \quad \ldots (4)$$

where Sm is a mean pit-to-projection space of the surface according to JIS B0601 (μm), Ra is a center-line mean roughness of the surface (μm), and Ep is a distance (mm) from the diffusing surface of the diffusing plate to the position of a viewer's eye.

22. The image display system according to claim 18, which satisfies the following conditions:

for a single transmission type diffusing plate,

$$15<(Sm/Ra)\times(Ep/400)<400 \quad \ldots (5)$$

for a double-transmission type diffusing plate,

$$25<(Sm/Ra)\times(Ep/400)<500 \quad \ldots (6)$$

for a front-surface reflection type diffusing plate,

$$80<(Sm/Ra)\times(Ep/400)<1,000 \quad \ldots (7)$$

for a back-surface reflection type diffusing plate,

$$150<(Sm/Ra)\times(Ep/400)<2,000 \quad \ldots (8)$$

where Sm is a mean pit-to-projection space of the surface according to JIS B0601 (μm), Ra is a center-line mean roughness of the surface (μm), and Ep is a distance (mm) from the diffusing surface of the diffusing plate to the position of a viewer's eye.

23. The image display system according to claim 21,

which satisfies the following condition:

$$Sm<200\ \mu m \qquad \ldots (9)$$

24. The image display system according to claim 11, wherein said eyepiece optical system comprises a Fresnel lens.

25. The image display system according to claim 11, wherein said eyepiece optical system comprises a Fresnel reflecting mirror.

26. The image display system according to claim 11, wherein said eyepiece optical system comprises a Fresnel back-surface mirror.

27. The image display system according to claim 11, wherein said diffusing surface is provided on at least one surface of said eyepiece optical system.